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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/579,903
Filing Date: November 15, 2006
Appellant(s): TANAKA ET AL.

Ronald P. Kananen and Christopher M. Tobin
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/6/2009 appealing from the Office action mailed 6/4/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

(9) Grounds of Rejection

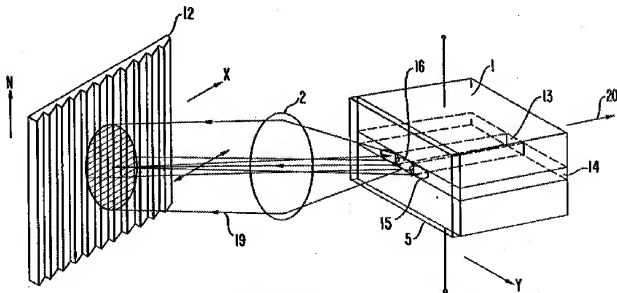
The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

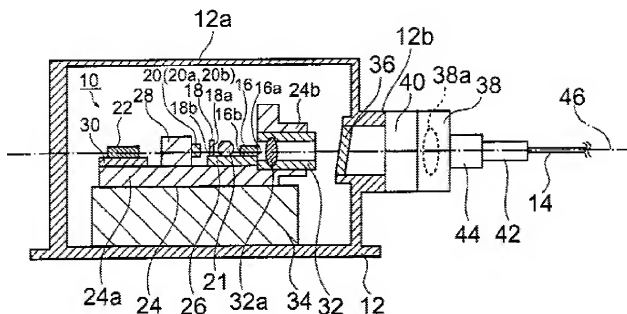
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-4, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura et al., US Patent 4,913,525 (hereinafter referred to as Asakura), in view of Kato et al., US Patent 6,488,419 (hereinafter referred to as Kato).



Asakura, figure 2



Kato, figure 2

For claim 1, Asakura teaches, an external cavity type semiconductor laser, comprising: a semiconductor laser device having a plurality of layers including an activation layer (figure 2, label 14); a grating that receives a beam emitted from the semiconductor laser device and returns a beam having a predetermined wavelength to the semiconductor laser device (figure 2, label 12 or figure 4, label 3); and a lens disposed between the semiconductor laser device and the grating and which collects the beam emitted from the semiconductor laser device (figure 2, label 2).

Asakura does not teach a window glass disposed opposite to a beam emission surface of the semiconductor laser device; wherein the window glass is arranged in a first state or a second state, in the first state the window glass is in parallel with a first axis nearly perpendicular to a surface that is in parallel with at least one of boundary surfaces of the activation layer and other layers of the semiconductor laser device, the

window glass being nearly in parallel with at least one of the boundary surfaces of the activation layer and the other layers of the semiconductor laser device, the window glass being nearly in parallel with the beam emission surface of the semiconductor laser device, the window glass being not in parallel with a second axis perpendicular to the first axis, and in the second state the window glass is not in parallel with the first axis, the window glass being nearly in parallel with the second axis.

However, Kato does teach a window glass (figure 2, label 36) disposed opposite to a beam emission surface of the semiconductor laser device (end face 16a); wherein the window glass is arranged in a first state or a second state, in the first state the window glass is in parallel with a first axis nearly perpendicular to a surface that is in parallel with at least one of boundary surfaces of the activation layer and other layers of the semiconductor laser device, the window glass being nearly in parallel with at least one of the boundary surfaces of the activation layer and the other layers of the semiconductor laser device, the window glass being nearly in parallel with the beam emission surface of the semiconductor laser device, the window glass being not in parallel with a second axis perpendicular to the first axis, in the second state the window glass is not in parallel with the first axis, the window glass being nearly in parallel with the second axis (figure 2, label 36 is in the second state which corresponds to figure 7b of the application) in order to hermetically seal the laser while allowing light out of the sealed enclosure (column 7, lines 66-67).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use Kato's window with Asakura's laser by placing the window

such that the grating receives a beam from the laser through the window and returned to the laser in order to hermetically seal the laser while still allowing light to interact with the grating.

For claim 3, Kato further teaches the window glass is arranged in the second state.

The combination does not teach the angle between the surface and the first axis is in the range from 1° to 1.6° .

However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to set the angle between 1° to 1.6° , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering workable ranges only involves routine skill in the art.

For claim 4, Asakura teaches the semiconductor laser device and the grating are arranged so that the semiconductor laser device supplies an S wave to the grating (column 1, lines 50-57).

For claim 11, The combination does not teach a reflectance of a first order diffracted beam of the grating is in the range from 10% to 30%.

However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to set the angle from 10% to 30%, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering optimum or workable ranges only involves routine skill in the art.

Claims 2, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura, in view of Kato, and further in view of Verdiell et al., US Patent 5,870,417 (hereinafter referred to as Verdiell).

For claim 2, the previous combination does not the window glass is arranged in the first state, and wherein an angle between a surface of the window glass and the second axis is in the range from 5° to 12°.

However, Verdiell does teach an angle of 5° to 12° with the second axis in order to prevent optical feedback into the optical cavity (column 5, lines 8-20).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine angle with the previous combination in order to prevent optical feedback.

For claim 7 the previous combination teaches using an AR coating (figure 2, label 5).

The previous combination does not teach a reflectance of a beam emission surface of the laser diode is 3% or less.

However, Verdiell does teach using an AR coating with 1% reflectance in order to suppress self oscillation (column 4, lines 14-16).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made to have a reflectance 3% or less in order to suppress self oscillation.

Claims 5-6, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura, in view of Kato, and further in view of Mizuno et al., "100mW Kink-free

Blue-violet Laser Diodes with Low Aspect Ratio," Proceeding of the 11th Sony Research Forum, 2001 (hereinafter referred to as Mizuno).

For claim 5, the previous combination does not teach the semiconductor laser device has an output power of at least 45 mW, and wherein when the semiconductor laser device emits a beam with an output power of 45 mW or less, a kink does not occur.

However, Mizuno does teach a semiconductor device has an output power of at least 45 mW, and wherein when the semiconductor laser device emits a beam with an output power of 45 mW or less, a kink does not occur (abstract).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the laser taught in Mizuno with the device of the previous combination in order to provide a blue single mode laser.

For claim 6, Mizuno further teaches the semiconductor laser device is a laser diode, wherein side surfaces of a ridge of the laser diode are buried with two layers of an insulation film (figure 1) to suppress the kink and a stripe width W is 1.6 μm or less (figure 6).

For claim 12, the previous combination does not teach the semiconductor laser device is a blue laser diode.

However, Mizuno does teach a blue laser diode (abstract).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the laser taught in Mizuno with the device of the previous combination in order to provide a blue single mode laser.

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura, in view of Kato, and further in view Sidorin et al. US Patent 7,027,469 (hereinafter referred to as Sidorin).

For claims 8-10, the previous combination does not teach the details that the NA is between .3 and .7 or that the cavity length is 10 mm to 30 mm.

However, Sidorin teaches the cavity is 1 cm to 3 cm (column 17, lines 66-67) and the NA is .5 (column 12, line 33).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the lengths and NA in Sidorin with the previous combination as they are workable ranges known in the art.

Claims 13-18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asakura, Kato, Mizuno, Verdiell, and Sidorin.

For claim 13, the arguments are applied as to claims 1, 4, 5, 7-9, and 11.

For claim 14, Mizuno is further applied as in claim 12.

For claim 15, Verdiell is further applied as to claim 2.

For claim 16, Kato is further applied as to claim 3.

For claim 17, Mizuno is further applied as to claim 6.

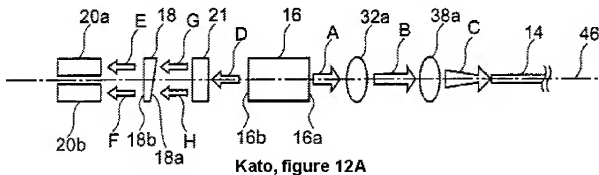
For claim 18, Sidorin is further applied as to claim 10.

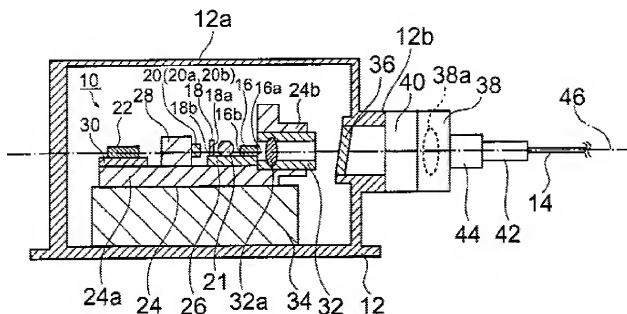
(10) Response to Argument

Regarding the appellant's argument that the rejection of independent claims 1 and 13 and their dependent claims 2-12 and 14-18 be withdrawn, the appellant states, on page 8, that Asakura fails to the claimed limitations of the window glass. The

examiner agrees with the statement, however, Kato is combined with Asakura in order to remedy the deficiency. The appellant then argues, on page 9, that Kato fails to disclose "a window glass disposed opposite to a beam emission surface of the semiconductor laser device; a grating that receives a beam emitted from the laser device through the window glass and returns a beam having a predetermined wavelength to the semiconductor laser device." The appellant points to schematic figure 12A of Kato and column 16, lines 6-8. Kato discloses:

"The light A emits from the light emitting surface 16a of the semiconductor laser 16 and then is converged through lens 32a toward the lens 38a to form light B. Further, the light B is converged by the lens 38a so as to enter the end face of the optical fiber 14 to form light C." (Kato, column 16, lines 13-17.)





Kato, figure 2

The appellant then states, on page 11, that light B would pass through hermetic glass 36. The examiner agrees and maintains that this "teaches a window glass disposed opposite to a beam emission surface (Kato, label 16a) of the semiconductor laser device"

The appellant then argues that "a grating that receives a beam emitted from the laser device through the window glass and returns a beam having a predetermined wavelength to the semiconductor laser device." The appellant is correct in that Kato does not, by itself teach "a grating that receives a beam emitted from the laser device through the window glass and returns a beam having a predetermined wavelength to the semiconductor laser device." However, the rejection is based on 35 USC § 103(a) rejection and Kato is used to teach the use of a window glass rather than the grating.

To elaborate on the rejection of claim 1 above Kato teaches light A is emitted from semiconductor laser 16, converged by a lens 32a and then passes through a window 36 which hermetically seal the semiconductor laser 16. The light is then focused into fiber 14. In the primary reference, Asakura teaches light (figure 2, label 19) is emitted from semiconductor laser (figure 2, label 1), converged by a lens (figure 2, label 2). The light is then is reflected by the grating (figure 2, label 12). Asakura makes no mention of the light passing through a window after it is converged by the lens. However, that is the reason for the combination with Kato which does teach a window after a light is converged in order to seal the laser while allowing light to be output from the laser.

The applicant argues on page 12 that the feature "a grating that receives a beam emitted from the semiconductor laser device through [a] window glass and returns a beam having a predetermined wavelength to the semiconductor laser device," should not be overlooked. It was not the examiner's intention to overlook the limitation. Therefore, the limitation has been addressed in additional detail above.

The argument for independent claim 13 and dependent claims 2-12 and 14-18 is based on the same reasoning as presented above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Michael Carter/

Art Unit: 2828

Conferees:

/Minsun Harvey/

Supervisory Patent Examiner, Art Unit 2828

/T C Patel/

Supervisory Patent Examiner, Art Unit 2839